The Psychological Record, 1963, 13, 269-272.

INDEPENDENCY AND OPERATIONISM IN Q-SORTING

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Misgivings about the independency of items in Q-sorting are shown to be due to misunderstandings about what is operational and what is not, and to the fallacy of thinking of items in a Q-sample in logical instead of in psychological-situational terms. Q-samples are composed of balanced block designs for systematic, logical reasons. But Q-sorting has no such logical involvement; it concerns, instead, the subject's understanding or apperception of a situation. What is independent, and what not, is therefore a matter of fact, not of definition. And because operations are inductive, Q-sortings are analyzed by inductive factor analysis rather than by variance analysis, though for some purposes the latter is of course in order.

Misgivings have often been expressed in the past, and more recently by Sundland (1962) and Sheldon and Sorenson (1960), about the independency of the items in a Q-sort. Lack of independence may greatly affect the size of the correlations and degrees of freedom on which the correlations are based. The example is quoted by Tucker (1963) of the use of such items as bashful, shy, modest, etc., as replications of the same trait, which may be included in a Q-sample. The problem is acute for any set of items composed in balanced block design along lines described by the present author (Stephenson, 1953) because unless the variances in the replication-cells are for conditions of independency, there can be no valid test of the homogeneity of the cells, or for any test of the main 'effects,' or for the determination of significant differences between the 'levels' of any 'effect.'

The misgivings are needless, however, if one understands operationism, and if one keeps in mind the "humanity" of words, (Sondel, 1958).

As we all know, prior to Einstein key concepts in science were defined in terms of "properties" or logical assumptions: in the physical case two events were held to be simultaneous, or not, by definition. Now, it seems, two traits are held to be synonymous or not, by definition. Yet even modest, shy and bashful are used by subjects with quite different meanings in different situations—a young child can be shy, a blushing bride bashful, an old woman modest. All *use* of language, surely, takes place on concrete "fields" of action; the significance of any meaning is a dependent function, not of definitions *in general* terms, but in psychological-situational terms. Kelley (1955) has drawn attention to interesting non-logical operations with traits; and the great novelist Musil (in his *The Man Without Qualities*) could well observe that the one word 'hard' describes four different entities when it is used in reference to love, brutality, eagerness or severity. Synonyms are logical, not psychological-situational definitions, and it is a fact that subjects perform a Q-sort oblivious of any similarity or identity of such traits, even as apparently similar as shy, modest and bashful, because the words have no such synonymous meaning for them until their attention is drawn specifically to it.

Moreover, the operational situation in Q-sorting leads most subjects to concentrate intently on the overall situation in Q-sorting; they become involved in providing their *understanding* of it, and do not adopt an analytical, critical, logical or introspective attitude about the items (all of which attitudes are characteristic of the critic, however, who never reaches an understanding). The basic data are such understandings, naively, non-critically, non-analytically given. It is an attitude very easy for most naive subjects to adopt. Care is necessary, of course, to ensure that error conditions do in fact enter into Q-sorting. Cards have to be shuffled; an attitude of detachment in the Q-sorting about each item in turn is called for, as in all applications of the psychophysical methods of impression; and one can ask the subject to place cards in a Q-sort face downwards, to limit dependencies—this reduces correlations, but in no case has it ever resulted in losing the significant factors at issue.

The real problem presented by Sundland and others, however, lies elsewhere. It concerns what is the operation at issue in a Q-sort. Everyone will agree that it is the Q-sorting performance as such. What its definition is, however, is a source of confusion. The critics relate it to the 'effects' in the structure of the Q-sample. The present author does not.

One should recall, in this connection, Daniel Defoe's satirical advocacy of scientific method. He observes Dr. Squirk haranguing a village to buy his quack medicine, and proposes a search in the church registers next month to find how many villagers had died compared with the previous month's figures. This, typical of the hypothesis-testing method widely current now-a-days in psychology, would test how far Dr. Squirk's medicine had cured or killed. The suggestion, though ingenious, is unscientific. The operation of counting is an admirable operational device; but one had better find out, first, who took the medicine, who died, who didn't and why. Operations, to be sound, have to keep "close to the facts."

Similarly in Q-sorting, what is at issue is not measurement of the "properties" of the 'effects' of the factorial structure, but something quite different, by definition. It is the subject's *understanding* that is being measured. This has the meaning given to the term by Dilthey (Hodges, 1944). Or, in systematic analytic psychology (Stout (1909)), a Q-sort is a model of a subject's *apperception* of a situation (defined as a new perception, see English (1934)). These concepts, of *understanding* and *apperception,* keep very close to the subjective character of Q-sorting. Both are profound concepts. In Dilthey's case, for example, understandings were fundamental—the basis upon which to found an ideographic psychology. Here we merely see understandings as the raw data of subjective psychology; and the same applies to Stout's use of the concept of apperception.

Why, then, are these profound matters lost sight of so easily? The reason, in part, is that what is important about operational definitions is little understood. Operational definitions, to be useful, should not *obtrude*. The writer has made the point before, following Popper (see Stephenson, 1961, p. 15). The scientist does not try to derive any information from his operational definitions, i.e., to presume upon them, or to use them in arguments. Their meaning is not taken too seriously; they are even a little vague (being used only in practical applications). All such characterize a Q-sort. Defined as an understanding or an apperception, these terms are as unobtrusive as the concepts of time and length are in physics.

Thus, the operations in Q-sorting are by definition primarily measurements of understandings or apperceptions, and not primarily any superimposed 'effects' of factorial designs. Yet they scarcely enter into any Q-technique discussions, and this is exactly how it should be in operations. We observe again that the Q-sorting operation keeps close to what it really measures.

But it will be said that this is quibbling, for why, otherwise, enter the 'effects' into a Q-sample design?

The answer is that a remote measurement concerning 'effects' sometimes "works." Thus, if Dr. Squirk's quack medicine cured (or killed) by direct cause, Daniel Defoe's operation (counting the deaths in the church registers) would be a statement of a conclusion, i.e., of the facts. But the operation alone guarantees no such conclusion.

The situation for Q-sorting with structured Q-samples is much the same. It may guarantee conclusions concerning the specified 'effects,' but in no case does this preclude quite different conclusions. The present writer, who has undoubtedly used Q-method longer and more than anyone else, rarely resorts to variance analysis in his Q-studies, yet almost all his Q-samples are structured in balanced block designs. This is because the structure merely puts into the Q-sample *logical* conditions, for the sake of being comprehensive and systematic. These logical conditions are matters of fact, or items defined as meaning such-and-such theoretically, or *in general*. They are about fairly obvious matters. One is involved in science, instead, in inductive inferences which are more than the mere empirical testing of deduced hypotheses; in the case of Q-sorting, one is concerned with what the subject actually does with the items, over and above anything logically entailed in the structure of the Q-sample.

One would have thought that the example in experimental aesthetics provided by the present writer expressly to illustrate the above pragmatics (in Stephenson (1953), p. 128-31), would have warned researchers that the inductive use of factor analysis far surpasses the deductive use of variance analysis in Q-studies. Thus, one can compose abstract artistic patterns to fit a factorial structure (Stephenson, 1953., p. 129), but the concern in aesthetics is with beauty and the like and not with the mere placing of materials on paper in regular, irregular, overlapping, or not-overlapping compositions (comprising the 'effects' and 'levels' of the compositions). The author therefore always resorts to inductive factor analysis, and only rarely to variance analysis, in his Q-studies. It is useful, on occasion, to have confirmation that one's specified 'effects' enter into the situation, but that is usually coincidental, and not what one is studying, or measuring.

Which returns us to the matter of independencies and operations in Q-sorting. What enters into the structure of a Q-sample is purely logical; Q-sorting itself, at its best or properly undertaken, is psychological-situational. Whether items are independent or not is an empirical matter, not one of prior definition. Independency is as it happens, not as it is by logic.

Operations, to be sound, should be very close to the phenomena under investigation, and operational definitions should be unobtrusive. If one asserts that what is being measured is shy, modest, bashful, etc., the definitions obviously obtrude: as we see, it isn't even valid to suppose that these three words really mean the same thing to a person in the act of performing a Q-sort, but that is another matter.

The writer proposes, again, that he knows of no methodology that stays closer to subjectivity, with operations systematically involved, than Q. He knows of none in psychology, either, which is so precise in its logic-of-science respects, or so interesting in its pragmatics. It requires, in the latter connection, no normative data; it can deal with single cases; it concerns itself with pure number scales sufficient for their purposes, whose zero is the same for all Q-sorts, by all Q-sorters, for all Q-samples—provided, of course, that the rules are obeyed. And it represents what at least two great minds, Dilthey's and Stout's, regarded as fundamental in subjective psychology.

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